

TITLE

MULTI-USE TOOL

CLAIM OF PRIORITY

[0001] This application makes reference to, incorporates the same herein, and claims all benefits accruing under 35 U.S.C. Sec.119 from my provisional application *SINGLE BODY MULTI-TOOL DEVICE* filed with the United States Patent Office on March 3, 2003 and thereby duly assigned Serial No. 60/451,544.

BACKGROUND OF THE INVENTION

Technical Field

[0002] This application generally relates to a multiplicity of carpentry tools that cooperate with a single housing. This invention is generally in the field of hand tools, and is specifically concerned with a tool for use in leveling operations; for example, carpentry and building construction layout.

Related Art

[0003] Many different types of carpentry tools are available which are hand held. U.S. Patent No. 4,404,753 issued to Henri Klok for *A CARPENTER'S SAW GUIDE AND SQUARE* issued on September 20, 1983, is for a lightweight portable carpenter's tool that singularly performs the

function of triangle, ruler, square, protractor, and leveling device.

[0004] U.S. Patent No 5,713,135 issued to Brad M. Acopulos for *A MULTI-PURPOSE CARPENTRY MEASURING DEVICE*, issued on February 3, 1998, is for a tool that combines the functions of a framing square, level and plumb bob in one function and one measurement.

[0005] U.S. Patent No. 4,912,851 issued to Joseph F. Rando for *A LEVEL/PLUMB INDICATOR WITH TILT COMPENSATION*, issued on April 3, 1990 is for a tool for use in establishing a precise level line or plumb line using a visible laser diode. It has an internal tilt compensation apparatus for compensating up to 5 degrees off of level.

[0006] U.S. Patent No. 6,581,296 issued to Felix C. Ponce for *A TAPE MEASURE WITH LASER BEAM*, issued on June 24, 2003 is for a tape measure with a case, a laser, a roll of tape, a dynamo power supply, and a solar cell.

SUMMARY OF THE INVENTION

[0007] It is an object of the invention to provide a multi-use tool, and more particularly, a plurality of tools embodied in a single housing, these tools being particularly useful in the field of carpentry.

[0008] It is another object of the invention to increase the productivity of its' user by placing a plurality of instruments needed for measuring, leveling, indicating, sharpening, and marking surfaces in one convenient location.

[0009] In accordance with the present invention, the above and other objects are accomplished by provision of a housing that comprises an ergonomic handle for carrying and using the invention,

1 wherein the housing includes a plurality of compartments for housing: a lockable tape measure,
2 a plurality of bubble levels for use in leveling and truing operations, a visible laser for providing
3 a visual reference line on surfaces, a rotatable and lockable square for obtaining angular
4 information between 0 and 180 degrees, a pencil holder and pencil sharpener.

5 BRIEF DESCRIPTION OF THE DRAWING(S)

6 [0010] A more complete appreciation of the present invention, and many of the attendant
7 advantages thereof, will become readily apparent as the same becomes better understood by
8 reference to the following detailed description when considered in conjunction with the
9 accompanying drawings in which like reference symbols indicate the same or similar components,
10 wherein:

11 [0011] FIG. 1 is a view of a multi-use tool according to a first preferred embodiment of the
12 present invention; and

13 [0012] FIG. 2 is a view of a multi-use tool according to a second preferred embodiment of the
14 present invention.

15 DETAILED DESCRIPTION

16 [0013] Referring to FIGS. 1 and 2 a multi-use tool 10 having a housing 110 and a plurality of
17 implements, or components, useful in the field of measuring, and in particular, the field of
18 carpentry.

19 [0014] Multi-use tool 10 comprises an ergonomic handle 20 for assisting in carrying the multi-

1 use tool 10. The housing 110 is provided with plural compartments to accommodate the various
2 implements of the multi-use tool 10.

3 **[0015]** The implements include a tape measure 40, with a tape lock 11, disposed within a
4 compartment at one end of housing 110. When a tape (not shown) within tape measure 40 is
5 extended, by, for example, pulling tape end 60 away from tape measure 40, tape lock 11 may be
6 moved in a first direction to lock the tape in the extended position and moved in an opposite
7 direction to allow the tape to be retracted or further extended. Tape measure 40 can be in integral
8 component of housing 110 or a removable component that sets in a corresponding compartment
9 in housing 110.

10 **[0016]** A plurality of levels 50, 51, and 52 are situated between tape measure 40 and ergonomic
11 handle 20 in Fig. 1, or, as shown in Fig. 2, handle 20 may be disposed between tape measure 40
12 and levels 50, 51, and 52.

13 **[0017]** Levels 50, 51, and 52 may be comprised bubble levels or digital levels having a display
14 such as a liquid crystal display and microcomputer, digital levels being more accurate. Levels 50,
15 51, and 52 will provide indications indicative of the orientation of multi-use tool 10, such as
16 whether multi-use tool 10 is horizontally level, vertically level or disposed on a 45 degree incline.

17 **[0018]** A pencil sharpener 91 is disposed in a compartment at another end of housing 110,
18 opposite to tape measure 40. Pencil sharpener 91 is suitable for sharpening a pencil 101 carried
19 in a pencil compartment 100 of housing 110 and having an opening 102, below pencil sharpener
20 91, for insertion and removal of pencil 101 from housing 110.

21 **[0019]** The pencil shavings resulting from sharpening of the pencil 101 will either be discharged

1 from and opening (not shown) in housing 110 or collected in a compartment 12. Compartment 12
2 can hold various implements not included as part of the tool, such a chalk, eraser, etc., and is
3 accessible by a hinged cover 13. The hinged cover 13 is provided with an access device 112 used
4 by the user to open cover 13, which is kept closed by one or more latches 15 and rotates about
5 hinges 14. Access device 112 may be a finger access port or a raised element above the surface
6 of cover 13. Latches 15 can be magnetic catches. Note that compartment 12 could have a
7 removable cover (not shown), as removable covers for compartments are generally known in the
8 art.

9 **[0020]** A sub-compartment (not shown) is provided within compartment 12 and houses rotatable
10 straight edge 70 used as rotatable square that cooperates with a one (e.g., bottom) outside edge
11 80 of housing 110 to provide angle information and position to a user. One end of straight edge
12 70 is centered on and rotatable about a pivot point 130. A notch 111 is provided in edge 80 to
13 enable a user to access straight edge 70 to rotatably pull straight edge 70 from the sub-
14 compartment.

15 **[0021]** A detent mechanism consisting of a first detent 17, a second detent 18, and a detent catch
16 19 cooperate together to allow the straight edge 70 to be rotated to a desired position and provide
17 a tactile indication as to whether the desired position is reached. Such desired positions may be
18 at 30, 45, 90 or 180 degrees. It is also conceivable have multiple detents indicative of, for
19 example, every five degree rotation of straight edge 70 about pivot point 130 for rapid angle setting
20 operations.

21 **[0022]** Detent catch 19 can be a simple raised bubble (or post), a ball bearing or a spring and

1 bearing combination. Detents 17 and 18 may be in a surface of straight edge 70 with detent catch
2 19 extending from a surface of the sub-compartment, or the detents 17 and 18 may be in a surface
3 of the sub-compartment with detent catch 19 extending from a surface of the straight edge 70.

4 **[0023]** Marking 120a are provided along at least one side of one edge of straight edge 70 and
5 markings 120b are provided on at least one side of housing 110 along edge 80. Markings 120a and
6 120b may be units of measure, such as millimeters, centimeters, or inches. Various ones of the
7 markings 120a on straight edge 70 may be used to indicate particular angles at which straight edge
8 70 is positioned with respect to edge 80 when certain ones of markings 120b on the housing 110
9 align with certain ones of markings 120a on straight edge 70.

10 **[0024]** Although not shown, it should be apparent that straight edge 70 can be rotatably mounted
11 on an exterior surface of the housing 110, the mounted end being a circular instead of square, such
12 that markings for indicating an angular position of rotation of the straight edge will be provided
13 on the side of housing 110 and along the periphery of the circular edge of straight edge 70.

14 **[0025]** Additionally, in either case, straight edge 70 can be separated from housing 110 and used
15 independently.

16 **[0026]** A pressure device 16, such as a knob, a spring washer or a combination thereof, is used
17 to apply variable pressure to straight edge 70 to hold straight edge 70 in a desired position or
18 control how easily straight edge 70 is centered on pivot point 130. Pressure device 16 is accessible
19 when cover 13 is opened.

20 **[0027]** Of course, if the straight edge is rotatably mounted on an exterior surface of the housing
21 110, as described above, pressure device 16 will also be rotatably mounted on the exterior surface

1 of the housing 110.

2 **[0028]** As shown in Figs. 1 and 2, laser generator 28 provides a visible narrow laser beam 30
3 through pencil sharpener 91. Laser generator 28 is disposed within its own compartment in
4 housing 110. A battery 32 and an on/off switch 31 provide power to laser generator 28. Note that
5 is should be understood that the laser generator could emit the beam through a different outlet,
6 instead of through the pencil sharpener, or be split, or reflected to emit through plural outlets, as
7 generally known in the art of laser levels.

8 **[0029]** The weight and balance of multi-use tool 10 allow, in particular, tape measure 40, to be
9 used by one person. Additionally, a surface, or portions thereof, of housing edge 80 has an
10 increased friction coefficient, such as a rubberized surface would provide, to assist in the single
11 use of the multi-use tool 10. A rubberized surface increases the static coefficient of friction between
12 the housing 110 and the surface the multi-use tool 10 is being used on. It allows one user to use
13 the multi-use tool 10 without having the assistance of another person to hold down the multi-use
14 tool 10. The surface of edge 80, or any other edge, can be magnetic (or separate magnets disposed
15 in respective holders can used) to enable multi-use tool 10 to be held to a metallic surface.

16 **[0030]** Also, a set pin 103 can be provided for securing the multi-use tool 10 to the surface of
17 a soft material, such a wood. The set pin would enable the user to move the tape while the set pin
18 holds the multi-use tool at a desired location, and would allow the multi-use tool to be rotated
19 about the pin to allow the user to change positions of the tape with respect to the set position of
20 the set pin. Fig. 1 shows pin 103 recessed and Fig. 2 shows pin 103 extracted for use. Pin 103 can
21 be manually manipulated or be spring loaded and released by pressing a button (not shown).

1 **[0031]** It should be apparent to one of ordinary skill in the art that various changes and
2 modifications can be made therein without departure from the scope of the invention, such as the
3 location, or position, of the various compartments and implements without departing from the
4 spirit of the invention.

5 **[0032]** For example, when a liquid crystal display and microcomputer are used for levels 50,
6 51 and 52, one of these can be used to display the angular position of straight edge 70, or a separate
7 liquid crystal display and microcomputer can be used to display the angular position of straight
8 edge 70, or if levels 50, 51 and 52 are bubble levels a liquid crystal display and microcomputer
9 can be used to display the angular position of straight edge 70.

10 **[0033]** As another example, a liquid crystal display and microcomputer can be used to display
11 measurements with respect to the extension of the tape in tape measure 40.

12 **[0034]** As a further example, one or more batteries can be provided in another compartment (not
13 shown) used to power any other electronic device, such as liquid crystal displays. Also, solar
14 panels can be provided on housing 110 for providing power to the electronic components utilized.

15 **[0035]** As an even further example, a pressure switch can be provided on at least one side of
16 housing 110 such that the weight of multi-use tool 10 will activate the pressure switch to power
17 laser generator 28 on.

18 **[0036]** As an even further yet example, a reflector can be provided to reflect the laser beam 30
19 through an alternative opening, or a beam splitter can be provided to cause the laser beam to be
20 discharged not only through pencil sharpener 91, but also through an alternative opening. Or
21 through a pair of alternative openings disposed at a predetermined angel (e.g., 90 degrees) to each

1 through housing 110, instead of through pencil sharpener 91.

2 [0037] Additionally, additional weight can be added to the multi-use tool to hold the multi-use
3 tool stationary for assisting a user of the multi-use tool to use the multi-use tool single handedly.

4 [0038] The invention has been described with particular embodiments thereof, however,
5 indicated by the foregoing, various changes and modifications can be made therein without
6 departure from the scope of the appended claims.